Remarks

Applicants acknowledge that the claims are patentable over the prior art. The Pending claims, however, have been rejected under 35 USC 112 for not meeting the written description and enablement requirements. The claims have also been rejected on the grounds of new matter.

With respect to the latter, claim 1 has been amended according to the Examiner's suggestion. Therefore, it is believed that the rejection is now moot. Acknowledgement to that effect is requested.

As noted above, the claims have been rejected as not meeting the written description requirement with respect to the phrase "at least one neutralizer". In particular, the Examiner contends that there is not an adequate written description for the genus "neutralizer" and that "one of skill in the art would not recognize from the disclosure that the applicant was in possession of the genus drawn to "a composition for enhancing the rate of mammalian skin exfoliation ... wherein the carrier includes tetrasodium EDTA and at least one neutralizer" (see p. 4 of the non-final rejection). Applicants cannot agree.

The claims have also been rejected as being indefinite. The Examiner contends that the expression "neutralizer" is without metes and bounds. One of skill in the art would understand the meaning of the term "neutralizers" as used in the claim and defined by the specification and examples. As a non-limiting example, Applicants attach at Tab 1 a Technical Data Sheet for a thickener (that could be used in the

composition of the subject application) and which provides at Figure 4 a list of ten of the most common neutralizers. This list provides objective evidence that the meaning of the term is not indefinite.

The Examiner also states that "a neutralizer is added to neutralize e [sic] the acid. There is no acid in table 5." Applicants cannot agree. As those of skill in the cosmetic know, a neutralizer can be used to adjust the viscosity of various thickeners (which are present in Table 5), particularly those that are supplied in their acid form. As an example, Applicants refer to the Technical Data Sheet attached at Tab 1. Therefore, Applicants contend that the Section 112 have been fully addressed and should be withdrawn.

In view of the fact that there are no prior art rejections, Applicants believe that the claims are allowable and notification to that effect is requested. The Examiner is requested to contact the undersigned attorney at (312) 321-4276 to resolve any remaining issues.

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TAB 1

Lubrizol

noveon
Consumer Specialties

TECHNICAL DATA SHEET

TDS-237
Edition: January, 2002

Neutralizing Carbopol®* and Pemulen®* Polymers in Aqueous and Hydroalcoholic Systems

Effect of pH on Viscosity

Carbopol® polymers must be neutralized in order to achieve maximum viscosity. Unneutralized dispersions have an approximate pH range of 2.5-3.5 depending on the polymer concentration. The unneutralized dispersions have very low viscosities, especially Carbopol® ETD and Ultrez polymers. Once a neutralizer is added to the dispersion, thickening gradually occurs as is demonstrated by Figure 1. Optimum neutralization is achieved at a pH of 6.5-7.0, but is not necessary. As demonstrated by the graph, high viscosities can be achieved in a range of 5.0-9.0.

A common question is "what pH is correct for my finished product?" The answer is that there is no correct or incorrect pH. pH should be determined by the desired attributes for a given application.

Viscosity begins to decrease after a pH of 9.0, and will continue to decrease if the pH is increased. This is due to the dampening of the electrostatic repulsion caused by the presence of excess electrolytes. It is possible to achieve high viscosity systems at pH values below 5 and above 9, but the use level of the Carbopol® polymer must be increased.

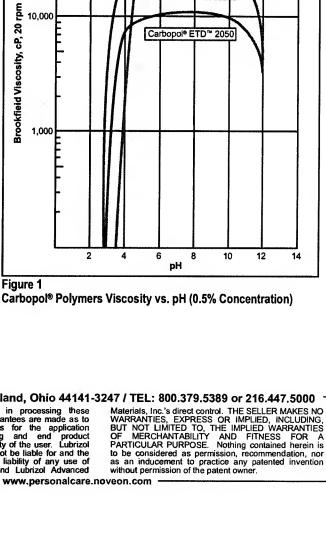

Figure 1
Carbopol® Polymers Viscosity vs. pH (0.5% Concentration)

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Figure 2
Schematic Depicting Molecule of Carbopol® Polymer in Coiled State

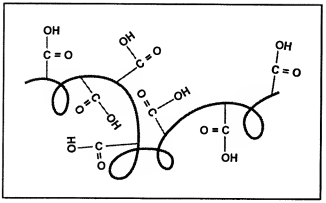
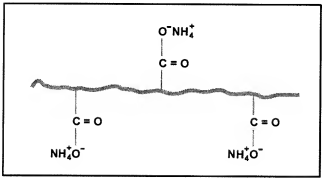


Figure 3
Diagram Depicting Molecule of Carbopol® Polymer in Uncoiled State



Thickening Mechanism

Carbopol® polymers as supplied are dry, tightly coiled acidic molecules. Once dispersed in water, the molecules begin to hydrate and partially uncoil. The most common way to achieve maximum thickening from Carbopol® polymers is by converting the acidic Carbopol® polymer to a salt. This is easily achieved by neutralizing the Carbopol® polymer with a common base such as sodium hydroxide (NaOH) or triethanolamine (TEA).

Figure 4
Neutralization Ratio Chart

Trade Name	CTFA Name	Manufacturer	Neutralization Ratio Base/ Carbopol® Polymer
NaOH (18%)	Sodium Hydroxide		2.3/1.0
Ammonia (28%)	Ammonium Hydroxide		0.7/1.0
KOH (18%)	Potassium Hydroxide		2.7/1.0
L-Arginine	Arginine	Ajinomoto	4.5/1.0
AMP-95®	Aminomethyl Propanol	Angus	0.9/1.0
Neutrol® TE	Tetrahydro-xypropyl Ethylenediamine	BASF	2.3/1.0
TEA (99%)	Triethanolamine		1.5/1.0
Tris Amino® (40%)*	Tromethamine	Angus	3.3/1.0
Ethomeen® C-25	PEG-15 Cocamine	Akzo	6.2/1.0
Diisopropanol-amine	Diisopropanol-amine	Dow	1.2/1.0
Triisopropanol-amine	Triisopropanol-amine	Dow	1.5/1.0

* **NOTE:** The 40% solution should be made from Tris Amino crystals from the manufacturer. Do not use the pre-dispersed solution from the manufacturer as it contains many impurities.

Common Neutralizers

Figure 4 lists ten of the most common neutralizers used, the manufacturers of these neutralizers, and the appropriate ratio (as compared to one part of Carbopol® polymers) to use to achieve exact neutralization at a pH of 7.0. The chart is based on Carbopol® Ultrez 10, but is applicable to all Carbopol® polymers because they all have the same equivalent weight of 76 ± 4.

Figure 5
Recommended Neutralizers for Hydroalcoholic Systems

Up to % Alcohol	Neutralizer
20%	Sodium Hydroxide
30%	Potassium Hydroxide
60%	Triethanolamine
60%	Tris Amino
80%	AMP-95®
90%	Neutrol TE
90%	Diisopropanolamine
90%	Triisopropanolamine
>90%	Ethomeen C-25

Hydroalcoholic Thickening

Ethanol and isopropanol can be thickened with Carbopol® polymers. The critical factor is choosing the correct neutralizer based on the amount of alcohol that is to be gelled. If the wrong neutralizer is used, the salt of the Carbopol® polymer will precipitate out because it is no longer soluble in the hydroalcoholic blend. Figure 5 gives recommended neutralizers for various alcohol levels.